

WHAT IS CLAIMED IS:

1. An image forming apparatus including an  
5 application for performing processes on image forming,  
and a system service for performing processes of a  
system side of the image forming apparatus on the basis  
of a request by using an API from the application, the  
image forming apparatus comprising:

10 an obtaining part for obtaining version  
information of APIs used by the application for the  
system service, and version information of APIs of the  
system service;

a comparing part for comparing, API by API,  
15 versions of the APIs used by the application with  
versions of the APIs of the system service.

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2. The image forming apparatus as claimed in  
claim 1, the image forming apparatus further comprising  
a part for comparing a version of a set of the APIs  
used by the application with a version of a set of APIs  
25 of the system service,

wherein the image forming apparatus performs comparison by the comparing part only when the versions of the sets of the APIs are different.

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3. The image forming apparatus as claimed in claim 1, wherein an executive program of the application includes the version information of the APIs used by the application, and

the obtaining part obtains the version information of the APIs used by the application from the application.

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4. The image forming apparatus as claimed in claim 3, wherein the image forming apparatus tentatively launches the application for obtaining the version information from the application.

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5. The image forming apparatus as claimed in claim 3, wherein the system service includes a plurality of system service modules,

5           the application includes version information of APIs used by the application for each of the system service modules,

          when the obtaining part obtains version information of APIs corresponding to a system service  
10 module from the application, the obtaining part obtains version information of APIs of the system service module from the system service module.

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6. The image forming apparatus as claimed in claim 1, the image forming apparatus comprising a file storing the version information of the APIs used by the  
20 application,

          wherein the obtaining part obtains the version information of the APIs used by the application from the file.

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7. The image forming apparatus as claimed in  
claim 1, wherein, when the comparing part compares the  
5 versions before the application is installed,

the image forming apparatus displays on an  
operation panel information indicating that the  
application can be installed if all versions of the  
APIs used by the application are the same as versions  
10 of corresponding APIs of the system service.

15 8. The image forming apparatus as claimed in  
claim 1, the image forming apparatus comprising:

control services for controlling hardware  
resources of the image forming apparatus, and

a virtual application service that operates  
20 as a client process for at least a control service, and  
operates as a server process for the application,

wherein the system service includes at least  
a control service that receives a request by using an  
API from the application, and the virtual application  
25 service.

5           9. The image forming apparatus as claimed in  
claim 8, wherein the virtual application service  
includes the obtaining part and the comparing part.

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          10. An API version check method performed by  
an image forming apparatus including an application for  
performing processes on image forming, and a system  
15 service for performing processes of a system side of  
the image forming apparatus on the basis of a request  
by using an API from the application, the method  
comprising:

          an obtaining step of obtaining version  
20 information of APIs used by the application for the  
system service, and version information of APIs of the  
system service;

          a comparing step of comparing, API by API,  
versions of the APIs used by the application with  
25 versions of the APIs of the system service.

5           11. The method as claimed in claim 10, the  
method further comprising a step of comparing a version  
of a set of the APIs used by the application with a  
version of a set of APIs of the system service,

              wherein the image forming apparatus performs  
10 comparison only when the versions of the sets of the  
APIs are different.

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              12. The method as claimed in claim 10,  
wherein an executive program of the application  
includes the version information of the APIs used by  
the application, and

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              wherein the version information of the APIs  
used by the application is obtained from the  
application.

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13. The method as claimed in claim 12,  
wherein the image forming apparatus tentatively  
launches the application for obtaining the version  
5 information from the application.

10 14. The method as claimed in claim 12,  
wherein the system service includes a plurality of  
system service modules,  
the application includes version information  
of APIs used by the application for each of the system  
15 service modules,  
the method comprising the steps of:  
obtaining version information of APIs  
corresponding to a system service module from the  
application, and  
20 obtaining version information of APIs of the  
system service module from the system service module.

15. The method as claimed in claim 10, the  
image forming apparatus comprising a file storing the  
version information of the APIs used by the application,  
wherein the version information of the APIs  
5 used by the application is obtained from the file.

10 16. The method as claimed in claim 10,  
wherein, when the versions are compared before the  
application is installed,  
the image forming apparatus displays on an  
operation panel information indicating that the  
15 application can be installed if all versions of the  
APIs used by the application are the same as versions  
of corresponding APIs of the system service.

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17. The method as claimed in claim 10, the  
image forming apparatus comprising:  
control services for controlling hardware  
25 resources of the image forming apparatus, and



a virtual application service that operates as a client process for at least a control service, and operates as a server process for the application,

wherein the system service includes at least  
5 a control service that receives a request by using an API from the application, and the virtual application service.

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18. The method as claimed in claim 17,  
wherein the virtual application service performs the obtaining step and the comparing step.

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19. A computer program for causing an image  
20 forming apparatus to execute a version check process,  
wherein the image forming apparatus includes an application for performing processes on image forming, and a system service for performing processes of a system side of the image forming apparatus on the basis  
25 of a request by using an API from the application, the

computer program comprising:

obtaining program code means for obtaining  
version information of APIs used by the application for  
the system service, and version information of APIs of  
5 the system service;

comparing program code means for comparing,  
API by API, versions of the APIs used by the  
application with versions of the APIs of the system  
service.

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20. The computer program as claimed in claim  
15 19, the computer program further comprising:

program code means for comparing a version of  
a set of the APIs used by the application with a  
version of a set of APIs of the system service,

wherein the comparing program code means  
20 performs comparison only when the versions of the sets  
of the APIs are different.

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21. The computer program as claimed in claim  
19, wherein an executive program of the application  
includes the version information of the APIs used by  
the application, and

5           the obtaining program code means obtains the  
version information of the APIs used by the application  
from the application.

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22. The computer program as claimed in claim  
19, the image forming apparatus comprising a file  
storing the version information of the APIs used by the  
15 application,

          wherein the obtaining program code means  
obtains the version information of the APIs used by the  
application from the file.

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23. The computer program as claimed in claim  
19, wherein, when the comparing program code means  
25 compares the versions before the application is

installed,

the computer program further includes program code means for causing the image forming apparatus to display on an operation panel information indicating  
5 that the application can be installed if all versions of the APIs used by the application are the same as versions of corresponding APIs of the system service.

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24. A computer program executed on an image forming apparatus, wherein the image forming apparatus includes a system service for performing processes of a  
15 system side of the image forming apparatus on the basis of a request from an application that performs processes on image forming, the computer program comprising:

program code means for determining whether  
20 tentatively launching the application or normally launching the application on the basis of a request from the system service, and

program code means for providing information on the application to the system service by  
25 communicating with the system service.

5                   25. A computer readable medium storing  
program code for causing an image forming apparatus to  
execute a version check process, wherein the image  
forming apparatus includes an application for  
performing processes on image forming, and a system  
10 service for performing processes of a system side of  
the image forming apparatus on the basis of a request  
by using an API from the application, the computer  
readable medium comprising:

obtaining program code means for obtaining  
15 version information of APIs used by the application for  
the system service, and version information of APIs of  
the system service;

comparing program code means for comparing,  
API by API, versions of the APIs used by the  
20 application with versions of the APIs of the system  
service.

26. A computer readable medium storing  
program code executed on an image forming apparatus,  
wherein the image forming apparatus includes a system  
service for performing processes of a system side of  
5 the image forming apparatus on the basis of a request  
from an application that performs processes on image  
forming, the computer readable medium comprising:

program code means for determining whether  
tentatively launching the application or normally  
10 launching the application on the basis of a request  
from the system service, and

program code means for providing information  
on the application to the system service by  
communicating with the system service.

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27. An information processing apparatus  
20 including an application, and a system service for  
performing processes of a system side of the  
information processing apparatus on the basis of a  
request by using an API from the application, the  
information processing apparatus comprising:

25 an obtaining part for obtaining version

information of APIs used by the application for the system service, and version information of APIs of the system service;

a comparing part for comparing, API by API,  
5 versions of the APIs used by the application with versions of the APIs of the system service.

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28. The information processing apparatus as claimed in claim 27, the information processing apparatus further comprising a part for comparing a version of a set of the APIs used by the application  
15 with a version of a set of APIs of the system service,

wherein the information processing apparatus performs comparison by the comparing part only when the versions of the sets of the APIs are different.

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29. The information processing apparatus as claimed in claim 27, wherein an executive program of  
25 the application includes the version information of the

APIs used by the application, and

the obtaining part obtains the version  
information of the APIs used by the application from  
the application.

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30. The information processing apparatus as  
10 claimed in claim 29, wherein the information processing  
apparatus tentatively launches the application for  
obtaining the version information from the application.

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31. The information processing apparatus as  
claimed in claim 29, wherein the system service  
includes a plurality of system service modules,

20 the application includes version information  
of APIs used by the application for each of the system  
service modules,

when the obtaining part obtains version  
information of APIs corresponding to a system service  
25 module from the application, the obtaining part obtains



version information of APIs of the system service  
module from the system service module.

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32. The information processing apparatus as  
claimed in claim 27, the information processing  
apparatus comprising a file storing the version  
10 information of the APIs used by the application,  
wherein the obtaining part obtains the  
version information of the APIs used by the application  
from the file.

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33. The information processing apparatus as  
claimed in claim 27, wherein, when the comparing part  
20 compares the versions before the application is  
installed,

the information processing apparatus displays  
on an operation panel information indicating that the  
application can be installed if all versions of the  
25 APIs used by the application are the same as versions

of corresponding APIs of the system service.

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34. The information processing apparatus as claimed in claim 27, the information processing apparatus comprising:

control services for controlling hardware  
10 resources of the information processing apparatus, and  
a virtual application service that operates as a client process for at least a control service, and operates as a server process for the application,

wherein the system service includes at least  
15 a control service that receives a request by using an API from the application, and the virtual application service.

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35. The information processing apparatus as claimed in claim 34, wherein the virtual application service includes the obtaining part and the comparing  
25 part.

5                   36. An API version check method performed by  
an information processing apparatus including an  
application, and a system service for performing  
processes of a system side of the information  
processing apparatus on the basis of a request by using  
10 an API from the application, the method comprising:  
an obtaining step of obtaining version  
information of APIs used by the application for the  
system service, and version information of APIs of the  
system service;  
15 a comparing step of comparing, API by API,  
versions of the APIs used by the application with  
versions of the APIs of the system service.

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37. The method as claimed in claim 36, the  
method further comprising a step of comparing a version  
of a set of the APIs used by the application with a  
25 version of a set of APIs of the system service,

wherein the information processing apparatus performs comparison only when the versions of the sets of the APIs are different.

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38. The method as claimed in claim 36,  
wherein an executive program of the application  
10 includes the version information of the APIs used by  
the application, and

wherein the version information of the APIs  
used by the application is obtained from the  
application.

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39. The method as claimed in claim 38,  
20 wherein the information processing apparatus  
tentatively launches the application for obtaining the  
version information from the application.

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40. The method as claimed in claim 38,  
wherein the system service includes a plurality of  
system service modules,

5           the application includes version information  
of APIs used by the application for each of the system  
service modules,

the method comprising the steps of:

obtaining version information of APIs  
10   corresponding to a system service module from the  
application, and

obtaining version information of APIs of the  
system service module from the system service module.

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41. The method as claimed in claim 36, the  
information processing apparatus comprising a file  
20   storing the version information of the APIs used by the  
application,

wherein the version information of the APIs  
used by the application is obtained from the file.

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42. The method as claimed in claim 36,  
wherein, when the versions are compared before the  
5 application is installed,

the information processing apparatus displays  
on an operation panel information indicating that the  
application can be installed if all versions of the  
APIs used by the application are the same as versions  
10 of corresponding APIs of the system service.

15 43. The method as claimed in claim 36, the  
information processing apparatus comprising:

control services for controlling hardware  
resources of the information processing apparatus, and  
a virtual application service that operates  
20 as a client process for at least a control service, and  
operates as a server process for the application,

wherein the system service includes at least  
a control service that receives a request by using an  
API from the application, and the virtual application  
25 service.

5                   44. The method as claimed in claim 43,  
wherein the virtual application service performs the  
obtaining step and the comparing step.

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                  45. A computer program for causing an  
information processing apparatus to execute a version  
check process, wherein the information processing  
15   apparatus includes an application, and a system service  
for performing processes of a system side of the  
information processing apparatus on the basis of a  
request by using an API from the application, the  
computer program comprising:

20                   obtaining program code means for obtaining  
version information of APIs used by the application for  
the system service, and version information of APIs of  
the system service;

                  comparing program code means for comparing,  
25   API by API, versions of the APIs used by the

application with versions of the APIs of the system service.

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46. The computer program as claimed in claim 45, the computer program further comprising:

program code means for comparing a version of  
10 a set of the APIs used by the application with a  
version of a set of APIs of the system service,

wherein the comparing program code means  
performs comparison only when the versions of the sets  
of the APIs are different.

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47. The computer program as claimed in claim  
20 45, wherein an executive program of the application  
includes the version information of the APIs used by  
the application, and

the obtaining program code means obtains the  
version information of the APIs used by the application  
25 from the application.



5           48. The computer program as claimed in claim  
45, the information processing apparatus comprising a  
file storing the version information of the APIs used  
by the application,

              wherein the obtaining program code means  
10 obtains the version information of the APIs used by the  
application from the file.

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              49. The computer program as claimed in claim  
45, wherein, when the comparing program code means  
compares the versions before the application is  
installed,

20           the computer program further includes program  
code means for causing the information processing  
apparatus to display on an operation panel information  
indicating that the application can be installed if all  
versions of the APIs used by the application are the  
25 same as versions of corresponding APIs of the system

service.

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50. A computer program executed on an  
information processing apparatus, wherein the  
information processing apparatus includes a system  
service for performing processes of a system side of  
10 the information processing apparatus on the basis of a  
request from an application, the computer program  
comprising:

program code means for determining whether  
tentatively launching the application or normally  
15 launching the application on the basis of a request  
from the system service, and

program code means for providing information  
on the application to the system service by  
communicating with the system service.

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51. A computer readable medium storing  
25 program code for causing an information processing

apparatus to execute a version check process, wherein  
the information processing apparatus includes an  
application for performing processes on image forming,  
and a system service for performing processes of a  
5 system side of the information processing apparatus on  
the basis of a request by using an API from the  
application, the computer readable medium comprising:

obtaining program code means for obtaining  
version information of APIs used by the application for  
10 the system service, and version information of APIs of  
the system service;

comparing program code means for comparing,  
API by API, versions of the APIs used by the  
application with versions of the APIs of the system  
15 service.

20 52. A computer readable medium storing  
program code executed on an information processing  
apparatus, wherein the information processing apparatus  
includes a system service for performing processes of a  
system side of the information processing apparatus on  
25 the basis of a request from an application that

performs processes on image forming, the computer  
readable medium comprising:

program code means for determining whether  
tentatively launching the application or normally  
5 launching the application on the basis of a request  
from the system service, and .

program code means for providing information  
on the application to the system service by  
communicating with the system service.

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